

ORDER NO. 3100

UNITED STATES OF AMERICA  
POSTAL REGULATORY COMMISSION  
WASHINGTON, DC 20268-0001

Before Commissioners:

Robert G. Taub, Acting Chairman;  
Nanci E. Langley, Vice Chairman;  
Mark Acton; and  
Tony Hammond

Price Elasticities and Internet Diversion

Docket No. RM2014-5

ORDER CLOSING DOCKET

(Issued February 26, 2016)

I. INTRODUCTION

This Order closes Docket No. RM2014-5, which was established to explore areas of possible improvement in demand analysis and forecasting.

II. BACKGROUND

This docket was initiated in response to a petition filed pursuant to 39 C.F.R. § 3050.11 by the National Postal Policy Council (NPPC), the Association for Mail Electronic Enhancement, the Association of Marketing Service Providers, GrayHair Software, Inc., the Greeting Card Association, the International Digital Enterprise Alliance, Inc., the Major Mailers Association, and the National Association of Presort Mailers (together, Petitioners).<sup>1</sup> The Petitioners allege that the Postal Service's

---

<sup>1</sup> Petition to Improve Econometric Demand Equations for Market-Dominant Products and Related Estimates of Price Elasticities and Internet Diversion, May 2, 2014 (Petition); see also Answer of the United States Postal Service in Opposition to Petition to Initiate a Proceeding Regarding Postal Demand Analysis, May 9, 2014; see also Reply in Support of Petition, May 19, 2014.

econometric volume demand model materially understates the price elasticities of demand for major postal products, generates incorrect measures of price elasticity, and does not accurately reflect factors that drive mail demand. Petition at 2.

First, Petitioners propose that firm-level models of the demand for transactional and marketing mail and similar models for the consumer mail market be developed. *Id.* at 14-16. This development would include a modeling of mailer behavior using surveys and interviews, with the results aggregated to produce industry-level price elasticities. *Id.* at 14-15. Second, Petitioners suggest re-estimating the econometric demand model by including a factor for electronic diversion. *Id.* at 16-17. Finally, Petitioners recommend comparing the elasticities derived from the firm-level models and the modeling of consumer behavior to the elasticities derived from the econometric demand estimates, as a method of corroborating each approach. *Id.* at 17.

In Order No. 2117, the Commission established this docket, scheduled a technical conference, appointed a Public Representative, and provided interested persons with an opportunity to comment.<sup>2</sup> The Commission determined that as an initial step in evaluating the elasticity of demand issue raised in the Petition, it would explore “alternative methods that have already been developed and [could] be presented for discussion.” Order No. 2117 at 5. To begin this discussion, a paper titled, *A Branching AIDS Model for Estimating U.S. Postal Price Elasticities* (Postal Elasticity Paper), and authored by Lyudmila Y. Bzhilyanskaya, Margaret M. Cigno, and Edward S. Pearsall was attached to Order No. 2117.<sup>3</sup> The Postal Elasticity Paper describes and applies a method for econometrically estimating a series of complete matrices of price elasticities for the Postal Service’s domestic mail (referred to hereinafter as the Branching AIDS Model). *Id.* Attachment A at 1.

---

<sup>2</sup> Notice and Order Scheduling Technical Conference, July 9, 2014 (Order No. 2117).

<sup>3</sup> *Id.* Attachment A. The views expressed in the Postal Elasticity Paper are those of its authors and were not reviewed or endorsed by the Commission or any Commissioner. Order No. 2117 at 5.

A technical conference was held on August 13, 2014, where the authors presented the Branching AIDS Model.<sup>4</sup> No other conference attendees presented or discussed other models.<sup>5</sup>

After the Commission reviewed the comments received, and in consideration of the discussion at the technical conference, the Commission issued a notice of inquiry to offer interested persons an opportunity to respond to questions relating to price elasticities and Internet diversion, on a more general basis than commenting solely on the Branching AIDS Model.<sup>6</sup> The Commission urged respondents to support their responses to the NOI with quantitative information. NOI at 1.

### III. COMMENTS ON THE BRANCHING AIDS MODEL

In response to Order No. 2117, the Commission received comments from: the American Postal Workers Union, AFL-CIO (APWU); the Association for Postal Commerce (PostCom); NPPC; the Postal Service; the Public Representative (who filed a statement by Professor Mark J. Roberts); and Valpak Direct Marketing Systems, Inc. and Valpak Dealers' Association, Inc. (together, Valpak, and which filed a statement by John Haldi, Ph.D.).<sup>7</sup>

---

<sup>4</sup> See Library Reference PRC-LR-RM2014-5/2, August 14, 2014.

<sup>5</sup> See Technical Conference for Docket No. RM2014-5, August 13, 2014 (audio recording available at [http://www.prc.gov/sites/default/files/webcasts/Technical\\_Conference\\_D\\_RM2014-5.mp3](http://www.prc.gov/sites/default/files/webcasts/Technical_Conference_D_RM2014-5.mp3)).

<sup>6</sup> Notice of Inquiry No. 1, June 12, 2015 (NOI).

<sup>7</sup> Comments of the American Postal Workers Union, AFL-CIO, September 19, 2014 (APWU Comments); Comments of the Association for Postal Commerce, September 19, 2014 (PostCom Comments); Comments of the National Postal Policy Council on Technical Conference and Attachment A, September 19, 2014 (NPPC Comments); Comments of the United States Postal Service in Response to Demand Analysis Technical Conference Material, September 19, 2014 (Postal Service Comments); Public Representative Comments, September 19, 2014 (PR Comments); Valpak Direct Marketing Systems, Inc. and Valpak Dealers' Association, Inc. Comments in Response to Order No. 2117, September 22, 2014 (Valpak Comments). Valpak also filed a motion for late acceptance of its comments. Valpak Direct Marketing Systems, Inc. and Valpak Dealers' Association, Inc. Motion for Late Acceptance of Comments, September 22, 2014 (Valpak Motion). The Valpak Motion is granted.

In general, the tenor of the comments received reflect the view that the Branching AIDS Model is an appropriate starting point for discussion purposes, and that it represents a significant effort to develop an alternative approach to estimating the elasticity of postal demand.<sup>8</sup> However, the commenters conclude that the Branching AIDS Model has a number of shortcomings that prevent its practical application in its current state. See APWU Comments at 3-5; NPPC Comments at 2-5; Postal Service Comments at 6-17, 19-20; PostCom Comments at 1-5; PR Comments at 3; Valpak Comments at 2-11.

In particular, several commenters state that the Branching AIDS Model, for a variety of reasons, does not appropriately model electronic diversion. See APWU Comments at 3; NPPC Comments at 3; PostCom Comments at 3-4; PR Comments, Attachment at 12-13; Valpak Comments at 9. Commenters also criticize the Branching AIDS Model for employing assumptions that may not accurately reflect the behavior of mailers. See NPPC Comments at 4; Postal Service Comments at 6-8; PostCom Comments at 2.

In the context of analyzing the features of both the Branching AIDS Model and the Postal Service's current demand models, commenters also discuss what they see as desirable improvements to the demand forecasting and elasticity estimates. APWU Comments at 3-5; NPPC Comments at 3-7; Postal Service Comments at 4-6, 18-20; PostCom Comments at 2-5; PR Comments at 3, Attachment at 7-16; Valpak Comments at 4-11. Multiple commenters agree that the postal demand models should capture certain factors that explain mail diversion, not limited to Internet usage. See APWU

---

<sup>8</sup> See NPPC Comments at 2 ("NPPC believes this [Branching AIDS Model] offers potential for improvement over the current model insofar as it demonstrates an ability to estimate price elasticities at the product and shape level, and encourages continued work along this line of inquiry."); Postal Service Comments at 4-5, 19; PR Comments at 3 ("[Professor Roberts] concludes the [Branching AIDS Model] provides an appropriate starting point for analyzing the aggregate quarterly time-series data used in the study but discusses the difficulty of estimating price elasticities, and particularly elasticities that vary over time, with this type of data."); Valpak Comments at 2 ("The paper...represents an interesting effort to develop a different approach to estimate statistically the elasticity of demand for postal products and services. That [the authors] have made a prodigious effort is obvious.").

Comments at 3; NPPC Comments at 3; PostCom at 3-4; PR Comments, Attachment at 10-13; Valpak Comments at 9.

The Postal Service notes that it is not opposed to improving its existing demand and forecasting models. Postal Service Comments at 5. It also confirms that “some of the results from the Branching AIDS Model are interesting and worthy of further exploration.” *Id.* It concludes that something akin to the share equations outlined in the Branching AIDS Model might be incorporated into future demand equations developed by the Postal Service. See *id.* at 4-6.

In addition to the general comments summarized above, several commenters provide specific insights and suggestions. For example, PostCom mentions that the role of demand elasticity models under the PAEA is unclear. PostCom Comments at 5. NPPC states that “[t]he lack of substantial real change in postal prices” during a time when many new electronic services were being introduced hinders the ability to determine the effect of price changes on volume using the available data. NPPC Comments at 3. Accordingly, NPPC reiterates its suggestion that the Commission initiate and conduct a study regarding the behavior of mailers. *Id.* at 5-6.

The Public Representative identifies the type and quality of the data, rather than model specification, as the biggest weakness in modeling demand for Postal Service products. See PR Comments, Attachment at 7-13. He recommends modeling demand by specifically identified customer groups; he also encourages using different sets of data to model postal demand for each customer group. *Id.* at 13-16. The Public Representative suggests that the Postal Service collect time-series data disaggregated by a geographic dimension (*i.e.*, Postal District or Area). *Id.* at 11-13, 16-17.

#### IV. NOTICE OF INQUIRY RESPONSES

After review of the comments filed in response to Order No. 2117 and in consideration of the discussion at the technical conference held on August 13, 2014, the Commission issued the NOI. The NOI was designed to afford interested parties an opportunity to respond to questions relating to price elasticities and Internet diversion.

NOI at 1. Responses to the NOI were received from: NPPC; the Postal Service; the Public Representative; and Valpak (which filed a statement by John Haldi, Ph.D.).<sup>9</sup> Those responses are briefly summarized below.

*NPPC.* NPPC explains that while the questions in the NOI are “reasonable from a theoretical perspective,” it would be more useful “to conduct empirical research into how mailers make decisions.” NPPC NOI Response at 1, 3. NPPC refers to past research where the Postal Service used mailer surveys but emphasizes that the results did not seem to have been applied to the Postal Service’s demand models. *Id.* at 3 n.2.

NPPC maintains that modeling the behavior of mailers based on interviews and surveys should help identify factors to use in volume demand and forecasting models. *See id.* at 3. NPPC also suggests that mailer surveys would be useful because the impact of technological innovations on mail, which NPPC views as the leading cause of mail volume decline, is not reflected well in the current postal demand models. *See id.* at 4, 6.

*Postal Service.* The Postal Service maintains that under existing circumstances, its current approach to modeling postal demand is the most appropriate. Postal Service NOI Response at 8. The Postal Service agrees, however, that many of the ideas suggested in the NOI are worthy of consideration. *Id.* at 2-6.

The Postal Service also agrees that with respect to certain subclasses of mail, modeling demand by shape may be beneficial. *Id.* at 3-4. On that note, the Postal Service confirms that it has already incorporated share equations of this type within the demand and forecasting models for First-Class and Standard Mail. *Id.*; *see also id.* Attachment at 1-2.

---

<sup>9</sup> Comments of the National Postal Policy Council in Response to Notice of Inquiry No. 1, August 28, 2015 (NPPC NOI Response); Response of the United States Postal Service to Notice of Inquiry No. 1, August 28, 2015 (Postal Service NOI Response); Public Representative’s Comments, August 28, 2015 (PR NOI Response); Valpak Direct Marketing Systems, Inc. and Valpak Dealers’ Association, Inc. Response to Notice of Inquiry No. 1, August 28, 2015 (Valpak NOI Response).

The Postal Service states that it is exploring a new approach to modeling that is conceptually similar to the Branching AIDS Model and is working on improving this approach. *Id.* Attachment at 2, 11. The Postal Service provides a detailed report describing its modifications to the demand models for First-Class and Standard Mail, where it attempts modeling separate subclass-level (or “trunk”) demand equations by shape. *Id.* at 2-10. However, the Postal Service emphasizes that further improvements are mainly restricted by the availability of historic data. Postal Service NOI Response at 2, 14. The Postal Service clarifies that if “such data were to begin to be reported...it would still take several years for enough data to accumulate...to be able to even begin to estimate price elasticities at that level of detail.” *Id.* at 14.

*Public Representative.* In general, the Public Representative supports both the Branching AIDS Model and the Postal Service’s current model; however, he proposes certain modifications, which could improve modeling electronic diversion and indirect competition. PR NOI Response at 7-11. Specifically, the Public Representative discusses several factors that could explain electronic diversion (*i.e.*, technological, economic, societal, cultural, and demographic factors) and lists particular variables, which could be included in any postal demand model to account for electronic communication. *Id.* at 3, 7-11.

The Public Representative also supports the introduction of share equations into postal demand and forecasting models. *Id.* at 4. He states that share equations would “allow the Postal Service to consider each class of mail in relation to each other, and to see clearly how consumers modify their budget in response to changes in prices and features.” *Id.* In addition, he finds that modeling postal demand by consumer groups would be beneficial and suggests using the findings of the Household Diary Study for this purpose. *Id.* at 12.

*Valpak.* Dr. Haldi states that although elasticity and diversion are both related to demand, the two terms represent different concepts. Valpak NOI Response, Statement of John Haldi, Ph.D. (Haldi Statement) at A-1. He also argues that much of the volume decline observed for First-Class Mail reflects diversion not caused by price elasticity.

Haldi Statement at A-2. Consequently, Dr. Haldi concludes that while a change in price might increase or decrease demand, “[d]iversion could have a much stronger effect on volume forecasts than elasticity.” *Id.* at A-3.

Dr. Haldi suggests that the “non-price factors causing diversion and a permanent shift in mail volume” should be studied. *Id.* at A-3. He also criticizes the Branching AIDS Model for “pay[ing] comparatively little attention to non-postal alternatives,” and, specifically, for downplaying the importance of electronic advertising. *Id.* at A-4, A-5. Finally, Dr. Haldi is unsure whether there would be any practical use for improved elasticity estimates and concludes that research efforts should instead focus on “study[ing] evolving exogenous factors that risk further diversion away from the mail.” *Id.* at A-11.

## V. COMMISSION ANALYSIS

Pursuant to 39 C.F.R. § 3050.11(a), any interested person may petition the Commission to initiate a proceeding to improve the “quality, accuracy, or completeness of the data or analysis of data contained in the Postal Service’s annual periodic reports....” After the proceeding is initiated, the Commission determines “whether to issue a notice of proposed rulemaking based on the petition and the supporting material received.” 39 C.F.R. § 3050.11(d).

The Commission commends the Petitioners for bringing attention to this issue and appreciates the participation in and quality of the comments submitted in this docket. The Commission, however, declines to issue a notice of proposed rulemaking based on these proceedings.

*Notice of proposed rulemaking is not appropriate at this time.* In general, the responses to the NOI suggest, and the Commission, in principle, concurs, that postal demand models could better reflect mailers’ behavior and better account for diversion. The NOI responses discuss several technological, demographic, and social factors that could explain electronic diversion and/or mailers’ behavior. While these observations and comments are helpful, the NOI responses do not provide analytical approaches that



would allow these factors to be directly incorporated into a postal demand model. In addition, neither the commenters nor respondents to the NOI provided a new postal demand model to replace the current Postal Service's demand model. As a result, there is no indication that issuing a notice of proposed rulemaking based on these proceedings would result in an improvement in the quality, accuracy, or completeness of the data or analysis of data contained in the Postal Service's annual periodic reports to the Commission. See 39 C.F.R. § 3050.11. Therefore, the Commission declines to issue such a notification.

*Commission view regarding mailer surveys.* The Petitioners also suggest considering an approach to study and analyze mailer behavior using surveys and interviews. Petition at 5-7, 14-16. NPPC reiterates this suggestion in its comments on the Branching AIDS Model and in its response to the NOI. NPPC Comments at 5-6; NPPC NOI Response at 4-6. The Commission also declines to pursue this recommendation.

After consideration and review, the Commission is not convinced that a survey of mailers would provide a "basis for identifying relevant factors to use in volume demand and forecasting models." NPPC NOI Response at 1. While surveys and interviews could theoretically improve the understanding of mailers' current behavior, there is no indication that their results would materially improve the quality, accuracy, or completeness of the data used to forecast future demand. See 39 C.F.R. § 3050.11. In particular, surveys would not be able to substitute for the missing historic data required for demand forecasting. See Postal Service NOI Response at 2, 14.

In addition, conducting surveys is a complex, time-consuming process that requires careful planning, management, statistical analysis, and substantial resources. In light of the fact that Commission use of demand analysis is limited and the resources needed to develop robust data from survey results are great, the Commission is unable to conduct surveys at this time. However, the Commission observes that using the already existing survey results and special studies (e.g., those mentioned by NPPC)

could provide useful information about mailers' behavior. See, e.g., NPPC NOI Response at 3 n.2, 7 n.3; PR NOI Response at 12.

Furthermore, the Commission notes that survey results may be biased if “the surveyed mailers were not selected on the basis of a scientific sample” and/or “only large mailers were included in the survey.”<sup>10</sup> Moreover, the Commission previously found that survey results do not “provide an adequate alternative to the econometrically calculated Postal Service own-price elasticities.” Order No. 1926 at 156. No convincing argument has been made in this docket to persuade the Commission that its prior conclusions are no longer valid.

*Potential improvements to the current demand models.* The Postal Service indicated that certain aspects of its current demand models could be improved (e.g., measuring the impact of competitors, reflecting mailing choices, estimating shape-based demand equations, structuring demand equations by consumer groups). Postal Service NOI Response at 2-3, 9-13. Additionally, the Postal Service confirmed that it will continue its efforts to develop better shape-based volume forecasts and incorporate them into the traditionally used demand equations estimated at the subclass level. *Id.* Attachment at 11.

The Postal Service followed through with this intention, and in the FY 2015 Market Dominant Demand Analysis filed with the Commission in January 2016, it implemented a number of changes to its demand and forecasting methodology, including the estimation of shape-level demand equations for First-Class Mail, Standard Mail, and Bound Printed Matter.<sup>11</sup> Specifically, a single “trunk equation” is estimated at the subclass level of detail, such as, “First-Class Single-Piece Letters, Cards, and Flats;” “First-Class Workshared Letters, Cards, and Flats;” “Standard Regular Mail”

---

<sup>10</sup> See Docket No. R2013-11, Order Granting Exigent Price Increase, December 24, 2013, at 156-157 (Order No. 1926).

<sup>11</sup> See Market Dominant - United States Postal Service's Demand Equation Estimation and Volume Forecasting Methodologies, January 2016, January 20, 2016 (FY 2015 Market Dominant Demand Analysis).

(excluding Parcels); “Standard Bulk Nonprofit;” “Shipping and Package Services;” and “Bound Printed Matter.”<sup>12</sup> As the Postal Service states, the coefficient estimates from trunk equations are then used as stochastic restrictions in the individual equations estimated by shape.<sup>13</sup> Consequently, at the relevant subclass level, the Postal Service estimates own-price elasticity by shape as “an average of the freely-estimated own-price elasticity from the shape equation and the own-price elasticity from the [t]runk [e]quation.”<sup>14</sup>

In addition, the FY 2015 Market Dominant Demand Analysis provides the demand equations for Periodicals at a finer level of detail than before, and estimates, for the first time, a demand equation for Inbound First-Class International Mail.<sup>15</sup>

The Commission supports the Postal Service’s ongoing efforts to improve its current demand models, including the further refinement of the demand equations provided in the FY 2015 Market Dominant Demand Analysis. The Commission encourages the Postal Service to look for ways to improve utilization of existing information regarding mailers’ behavior and Internet diversion and incorporate that information into its demand and forecasting models. The Commission also encourages the Postal Service to explore ways to more accurately model the impact of diversion on mail volumes.

The Commission anticipates that it may initiate a new docket when the Postal Service’s own modeling efforts draw closer to fruition. In the meantime, the Commission requests that the Postal Service annually apprise the Commission with

---

<sup>12</sup> FY 2015 Market Dominant Demand Analysis, Changes to Econometric Demand Equations for Market Dominant Products since January, 2015, at 2 (January 2016 Changes to Demand Equations); FY 2015 Market Dominant Demand Analysis, Econometric Demand Equations for Market Dominant Products as of January, 2016, at 1, 43, 86, 128, 171, 195 (January 2016 Demand Equations).

<sup>13</sup> January 2016 Changes to Demand Equations at 2; January 2016 Demand Equations at 1, 39, 45, 86, 126, 171, 195.

<sup>14</sup> See, e.g., January 2016 Demand Equations at 15.

<sup>15</sup> See January 2016 Changes to Demand Equations at 2.

respect to its progress when it provides the documentation of demand elasticities and volume forecasts pursuant to 39 C.F.R. § 3050.26.

## VI. CONCLUSION

In consideration of the discussion above, the Commission concludes the most appropriate action is to close this docket.

## VII. ORDERING PARAGRAPHS

*It is ordered:*

1. Docket No. RM2014-5 is closed.
2. The Postal Service will apprise the Commission with respect to its progress in more accurately modeling the impact of diversion on mail volumes when it annually provides the documentation of demand elasticities and volume forecasts pursuant to 39 C.F.R. § 3050.26.

By the Commission.

Stacy L. Ruble  
Secretary